

Test Results of CMAQ: PC vs. SUN

Overall Specifications:

Modeling Domain: 75 columns x 69 rows x 21 layers (Demo domain)

Simulation Period: First spin-up day (July 6, 1995—24 hours)

Source code: June 2000 release version of CMAQ (including new aerosol module)

Modules: ctm, par_noop, init, denrate, gencoar, hppm, vppm, eddy, unif, phot, ping_noop, qssa & smvgear, aero, aero_depv, cloud_radm, util, pa

		QSSA	SMVGEAR
Sun Ultra 30 **** Solaris CPU: 250 Mhz 256 Mbytes Memory Optimization On		CPU Time: 18:03:53.19	CPU Time: 30:30:10.92
Dell Precision 410 PC Windows NT CPU: 400 Mhz 524 Mbytes Memory Compaq Visual Fortran 6.1 Optimization On		CPU Time: 14:08:57.38	CPU Time: 27:04:46.22
Absolute difference in results between the two platforms Layer 1	O3	-1.2ppb to 0.13ppb	-0.7ppb to 0.04ppb
	NOx	-0.22ppb to 0.46ppb	-0.07ppb to 0.47ppb
	CO	-0.53ppb to 0.35ppb	-0.53ppb to 0.35ppb
	OH	-2.0E-5ppb to 1.9E-5ppb	-0.94E-6ppb to 2.2E-6ppb
	ASO4J	-0.39ug/m3 to 0.83ug/m3	-0.21ug/m3 to 0.25ug/m3
	ASO4I	-0.57ug/m3 to 0.41ug/m3	-0.26ug/m3 to 0.21ug/m3

**** SUN model run for QSSA used corrected RPMARES in aerosol model

		QSSA	SMVGEAR
Percent difference in results between the two platforms	O3	-5.4% to 1.3%	-2.4% to 0.28%
	NOx	-12% to 14%	-4.9% to 14%
	CO	-0.66% to 0.42%	-0.65% to 0.41%
	OH	-47% to 12%	-22% to 84%
	ASO4J	-21% to 43%	-6.9% to 9.0%
Layer 1	ASO4I	-49% to 245%	-47% to 244%